EEL 3003 | Elements of Electrical Engineering

Class Number: 13337

Instructor Information

Dr. Lilianny Virgüez

Course Details

Catalog Description: Introduces the theory and practice of electrical engineering for those not majoring in electrical engineering. Discusses circuits, machines, electronics and systems.
Pre- and Co-Requisites: Prereq: MAC 2313 and PHY 2049.
Credit Hours: 3
Course Fees: $27.99

Required Materials

ELEGOO UNO R3 SUPER STARTER KIT COMPATIBLE WITH ARDUINO IDE
Authors: HTTPS://WWW.ELEGOO.COM/PRODUCTS/ELEGOO-UNO-PROJECT-SUPER-STARTER-KIT
All Access: This course does not use UF All Access

Course Goals and Objectives

1)Become familiar with common engineering circuit components.

2)Understand role of circuits across engineering majors for future multidisciplinary courses or projects.

3)Learn techniques to solve open-ended engineering challenges.

4)Understand core equations and numerical problem-solving techniques of introductory circuits.

5)Connect circuit theory and equations to practice and builds with physical circuits components.

Expectations and Student Learning Outcomes

By the end of this course, students will be able to:

Explain the function of common electrical circuit components (e.g., resistors, capacitors, inductors) and describe how they are used in basic circuits.

Apply fundamental circuit laws and equations (e.g., Ohm's Law, Kirchhoff's Laws, power relationships) to analyze and solve numerical problems in DC and introductory AC circuits.

Design, build, and test simple circuits using physical components.

Apply systematic engineering problem-solving strategies to analyze and propose solutions to open-ended circuit-based engineering challenges.

Relation to Program Outcomes (ABET)

Outcome	Coverage*
An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Low

An ability to communicate effectively with a range of audiences	Low
An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Low

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Methods of Evaluation

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Assignment	**Points**	**Percentage of Final Grade**
Homework (4)	5 each	20%
Arduino Reports (4)	5 each	20%
Exams (3)	20 each	60%

Grading Scale

Letter grade and percentage

Letter	Percentage Value
A	92 - 100%
A -	90 - 91.99%
B +	88 - 89.99%
B	82 - 87.99%
B -	80 - 81.99%
C +	78 - 79.99%
C	72 - 77.99%
C -	70 - 71.99%
D +	68 - 69.99%
D	62 - 67.99%
D -	60 - 61.99%
E	59% and below

Course Schedule

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Week	Topics	Major Assignments / Assessments
1	Physics II Review – Intro to Arduino	Homework 1
2	Circuit Analysis Techniques	Homework 2
3	Circuit Analysis Techniques Part 2	Exam 1 Homework 3
4	Operational Amplifiers, Capacitor and Inductor Networks	Exam 2
5	AC Circuits Part 1	Homework 4
6	AC Circuits Part 2	Exam 3

University Policies and Resources

Information about grading policies, support for students with disabilities, course evaluations, the Honor Code, and other course

policies and campus resources can be found on the Syllabus Policies page.

Attendance Policy

Excused and Unexcused Absences

Students may only participate in classes if they are registered officially or approved to audit with evidence of having paid audit fees. The Office of the University Registrar provides official class rolls to instructors.

Students are responsible for satisfying all academic objectives as defined by the instructor. Absences count from the first-class meeting.

Acceptable reasons for absence from or failure to engage in class include illness; Title IX-related situations; serious accidents or emergencies affecting the student, their roommates, or their family; special curricular requirements (e.g., judging trips, field trips, professional conferences); military obligation; severe weather conditions that prevent class participation; religious holidays; participation in official university activities (e.g., music performances, athletic competition, debate); and court-imposed legal obligations (e.g., jury duty or subpoena). Other reasons (e.g., a job interview or club activity) may be deemed acceptable if approved by the instructor.

For all planned absences, a student in a situation that allows an excused absence from a class, or any required class activity must inform the instructor as early as possible prior to the class. For all unplanned absences because of accidents or emergency situations, students should contact their instructor as soon as conditions permit.

Students shall be permitted a reasonable amount of time to make up the material or activities covered during absence from class or inability to engage in class activities because of the reasons outlined above.

If a student does not participate in at least one of the first two class meetings of a course or laboratory in which they are registered, and they have not contacted the department to indicate their intent, the student can be dropped from the course. Students must not assume that they will be dropped, however. The department will notify students if they have been dropped from a course or laboratory.

The university recognizes the right of the instructor to make attendance mandatory and require documentation for absences (except for religious holidays), missed work, or inability to fully engage in class. After due warning, an instructor can prohibit further attendance and subsequently assign a failing grade for excessive absences.

Religious Holidays Guidelines

At the University of Florida, students and faculty work together to allow students the opportunity to observe the holy days of their faith. A student should inform the faculty member of the religious observances of their faith that will conflict with class attendance, with tests or examinations, or with other class activities prior to the class or occurrence of that test or activity. The faculty member is then obligated to accommodate that particular student's religious observances. Because students represent a myriad of cultures and many faiths, the University of Florida is not able to assure that scheduled academic activities do not conflict with the holy days of all religious groups. Accordingly, individual students should make their need for an excused absence known in advance of the scheduled activities.

The Florida Board of Education and state law govern university policy regarding observance of religious holidays.

Guidelines

- Students, upon prior notification to their instructors, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith.
- Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence.

- Students shall not be penalized due to absence from class or other scheduled academic activity because of religious observances.

If a faculty member is informed of or is aware that a significant number of students are likely to be absent from class because of a religious observance, the faculty member should not schedule a major exam or other academic event at that time.

A student who is to be excused from class for a religious observance is not required to provide a second party certification of the reason for the absence. Furthermore, a student who believes that they have been unreasonably denied an education benefit due to religious beliefs or practices may seek redress through the student grievance procedure.

Absence due to Illness

A student who is absent from class or any required class-related activity because of illness should contact their instructor, if feasible, as early as possible prior to the missed class or activity.

Students shall be permitted a reasonable amount of time to make up the material or activities covered during an excused absence.

Students should contact their college by the deadline to drop a course for medical reasons. Students can petition the Dean of Students Office to drop a course for medical reasons. The university's policy regarding medical excuse from classes is maintained by the Student Health Care Center.

Twelve-Day Rule

Students who participate in university-sponsored athletic or scholarly activities are permitted to be absent 12 scholastic days per semester without penalty. A scholastic day is any day on which regular class work is scheduled as defined in the approved university calendar. More Info

The student or student's advisor must notify the instructor as early as possible prior to the anticipated absence to allow ample time for accommodations. Instructors must be flexible and not penalize

students when re-scheduling during-term and final exams, class assignments, and other required activities and must follow the UF Attendance Policy herein and UF Examination Policies. As noted in the UF Examination Policies, during-term exams should be re-scheduled no later than before the end of the semester, while final exams no later than 90 days after the originally scheduled exam time. However, instructors are encouraged to re-schedule final and during-term exams, assignments, and other activities as soon as possible after the last day of the absence and must not penalize the student in any way. More Info

A group's schedule that requires absence of more than 12 scholastic days should be adjusted so that no student is absent from campus more than 12 scholastic days. Students who previously have been warned in writing by their instructor about the impact of absences on their individual class performance should not incur additional absences, even if they have not been absent 12 scholastic days. The student is responsible to maintain satisfactory academic performance and attendance.